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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/601,912  
Filing Date: June 23, 2003  
Appellant(s): ANTRIM ET AL.

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James P. Krueger  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed August 11, 2010 appealing from the Office action mailed January 12, 2010.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

U.S. Serial No. 11/184,989 and 10/874,686 are also pending before this Board on Appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

1, 2, 4, 34, 35, and 41-43.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being

maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

5,972,395	SALEEB	10-1999
5,603,971	PORZIO	2-1997
5,358,729	Okhuma	10-1994
5,518,739	MEYERS	5-1996
6,630,586	FOUACHE	10-2003

Tate & Lyle, Maltodextrins & Corn Syrup Solids.

Stahl et al. WO 01-33973, May 17, 2001, translation.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 34, 35, 41, and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Saleeb (US 5,972,395, October 25, 1999, of record) as evidenced by Tate & Lyle (Maltodextrins & Corn Syrup Solids, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Saleeb teaches a product prepared by extruding a mixture of glucose, maltose, maltotriose, mannose, sugar alcohols, adipic acid, citric acid, or malic acid, or a combination thereof; and high maltose corn syrup solids and/or 5-20 DE maltodextrin. The extrusion may be carried out at temperatures up to 190°C. [claims 1-10]. As evidenced by Tate & Lyle, 5 DE maltodextrin contains dextrose (about 1%) along with other oligosaccharides, 88% of which are DP11+ or higher. Thus, citric acid along with dextrose and other malto-oligosaccharides which are starch hydrolysates and have DP of 5 or more were extruded. The "additional saccharide" could be any of the oligosaccharides present in the mixture. Although Saleeb does not teach whether the product contains a majority of 1,4-bonds as well as some 1,2- and 1,3-bonds, the product is made by the same process as is recited in the instant claims, so the product should be the same as that of the instant claims.

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Porzio (US 5,603,971, February 18, 1997, of record) as evidenced by Tate & Lyle (Maltodextrins & Corn Syrup Solids, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Porzio teaches a process wherein 10 DE maltodextrin, 42 DE corn syrup solids, and 0.5 wt% citric acid were extruded at 300°F (about 149°C). Typically, the temperature will be up to 320°F (about 160°C). The maltodextrin and corn syrup solids (starch hydrolyzates) comprise a variety of oligosaccharides, including dextrose and those which have DP of 5 or greater, as evidenced by Tate & Lyle. The "additional saccharide" could be any of the oligosaccharides present in the mixture. Although Porzio does not teach whether the product contains a majority of 1,4-bonds as well as some 1,2- and 1,3-bonds, the product is made by the same process as is recited in the instant claims, and so the product should be the same as that of the instant claims. Thus, the claims are anticipated.

Claims 1, 2, 4, 34, 35, and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Okhuma (US 5,358,729, October 25, 1994, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Okhuma teaches a product which was prepared by extrusion of corn starch in the presence of hydrochloric acid [column 14, Experimental Example 1]. Characteristics of the products prepared are shown in Table 4. Sample No. 1, for example, contains 53.6% of 1,4-bonds and also contains 1,3- and 1,2-bonds. A different product had 62.3% of 1,4-bonds, as well as 1,2- and 1,3-bonds [Table 7, first entry].

Claims 1, 2, 4, 34-35, and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyers (US Patent 5,518,739, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Meyers teaches Fibersol, a maltodextrin derivatized with dextrin via glycosidic linkages such as  $\alpha$ -1,6,  $\beta$ -1,2,  $\beta$ -1,3 and  $\beta$ -1,6 (col.3, lines 22-24). As recognized by Applicant in the declaration of Dr. Mungara submitted August 7, 2007 and in the response submitted November 14, 2008, Fibersol has 51.5% of 1,4-bonds and is digested by mammalian enzymes more slowly than glucose.

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Fouache et al. (US Patent 6,630,586, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Fouache et al. disclose maltodextrin derivatized with dextrin via glycosidic linkages such as  $\alpha$ -1,6 and  $\alpha$ -1,4 (claim 1 ). Fouache et al also disclose maltodextrin derivatized with dextrin via glycosidic linkages such as 1-2, 1-3, 1-4, and 1-6 (Co1.8, Tables I and II). Products having 50% or 95% of 1,4-linkages are exemplified [column 8, Table I]. The product having 50% of 1,4-linkages also had 10% each of 1,2- and 1,3-linkages. As discussed above, it is not clear whether "extrusion" will necessarily result in a product having 1,2- and 1,3-bonds and thus claims 1, 2, 4, 34, and 35 are anticipated by products D and E of Table I, which have 95% 1,4-bonds. Product C is disclosed by Fouche et al. as having 50% 1,4-linkages. Applicant's response submitted November 14, 2008 indicates that the percentage of 1,4-bonds in the Nutriose product

was experimentally determined to be 49.6% by Dr. Mungara, when multiple linkages are counted. Using the declaration of Dr. Mungara submitted August 7, 2007 (Table 2), the examiner added the percentages for all the 4-glc values for Nutriose, including the multiple linkages. 4-glc was indicated on page 4 of the declaration to be where a branch point existed at the 4-position. The result of that calculation was 55.7%, which is a majority. Thus, the claims are anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 34, 35, and 41-43 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stahl (WO 01/33973, May 17, 2001, human translation, of record). This rejection was set forth in the office action mailed January 12, 2010 and is reiterated in full herein.

Stahl teaches a modified carbohydrate made of a base body and a carbohydrate residue coupled therewith [abstract]. In example 1, maltodextrin was derivatized with glucose residues [pages 19-21 of human translation document]. Products obtained by derivatization of maltodextrin with glucose in the 1-2, 1-3, 1-4, or 1-6 position are specifically claimed [claim 4], and are preferably obtained by the use of transglucosidase from *Leuconostoc mesenteroides* [claim 5].



Stahl does not teach the percentage of bonds which are 1,2-, 1,3-, 1,4-, or 1,6-bonds. However, since Stahl's product is a derivatized maltodextrin, which has 1,4-bonds, and because Stahl et al. teaches that the product of Example 1A is digestible [claim 1 and Figure on page 31], the skilled artisan would expect that Stahl's product contains a majority of 1,4-bonds. Further, Stahl provides guidance for the desirable characteristics of the product, glucose release [claim 1], and provides guidance for the use of other enzymes [page 17 and 18], and for variation of process conditions [page 19-25]. Thus, the skilled artisan would have motivation and guidance to optimize process conditions to obtain a product with moderated glucose release.

#### **(10) Response to Argument**

Appellant argues that Saleeb does not teach derivatization, that Saleeb's product does not have the required bonds, and that Saleeb doesn't teach that the starting material should contain at least 50% dextrose. Appellant's arguments with respect to derivatization and the bonds formed in the product are not persuasive because Saleeb's product is prepared by the same process as recited in the instant product-by-process claims. Saleeb teaches extrusion of a mixture of saccharides in the presence of an acid, at a temperature which is described in the instant specification as being appropriate for the preparation of saccharide-derivatized oligosaccharides (page 10, 25°C-220°C). Because the product was prepared by the same process, it would be expected to be the same product. Appellant's argument with respect to the amount of dextrose in the starting material is not persuasive because the claims are broad, the claims are drawn to a mixture, and the claims do not require a particular amount of

dextrose in the mixture. Furthermore, the claims do not require a particular weight amount of dextrose in the starting material. For example, the saccharide product starting material itself is not required in any particular amount. The reaction mixture could contain, for example, 10 g of saccharide product which is 100% dextrose, or 1 mg of saccharide product which is 50% dextrose. Each scenario meets the claimed limitation of starting material which is at least 50% dextrose, and each scenario results in very different amounts of dextrose in the mixture. As was set forth in the office action mailed January 12, 2010, the instant claims require an extrusion reaction product of a mixture of: (1) a saccharide product having a DP of 1-4 and comprising at least 50% dextrose; (2) a mixture of malto-oligosaccharides having a DP of 5 or more; (3) a starch hydrolysate; and (4) an additional saccharide. A starch hydrolyzate is a product resulting from the hydrolysis of starch, and encompasses malto-oligosaccharides and dextrose. The additional saccharide could be considered any saccharide, but especially dextrose as recited in claim 41. Thus, the mixture which is subject to extrusion reaction contains, at minimum, dextrose and malto-oligosaccharides having a DP of 5 or more. There is no limitation placed on the amount of dextrose as a percentage of the total mixture which is subject to extrusion. Thus, Appellant's arguments with respect to the amount of dextrose taught by Saleeb are drawn to limitations which are not claimed. Furthermore, as set forth in the office action mailed January 12, 2010, there is significant overlap between the products or mixtures recited in claim 1. For example, any or all of the "saccharide product having a DP of 1-4," the "additional saccharide," or the "starch hydrolyzate" could be dextrose. The claims require an extrusion product of a

mixture of all of these (along with malto-oligosaccharides). Thus, the dextrose present in Saleeb's mixture can be considered part of the "saccharide product," the "additional saccharide," and/or the "starch hydrolyzate." Saleeb teaches extrusion of a mixture of saccharides which includes dextrose. Claim 1 requires the use of a "saccharide product" which is at least 50% dextrose, but does not require a particular percentage of the total mixture to be dextrose. Thus, Saleeb's dextrose could be considered the "saccharide product," which is at least 50% dextrose. Saleeb's dextrose could also be considered the starch hydrolyzate or the additional saccharide, as set forth above. Thus, it is considered that Saleeb's mixture contained a saccharide product which was at least 50% dextrose.

Appellant argues that Porzio does not teach derivatization, that Porzio's product does not have the required bonds, and that Porzio doesn't teach that the starting material should contain at least 50% dextrose. These arguments are the same as were addressed above for Saleeb, and the response is the same as set forth above.

Appellant argues that Okhuma does not teach a starting saccharide including 50% dextrose and does not teach a starting material comprising a starch hydrolyzate to which additional saccharide has been added. As set forth in the office action mailed January 12, 2010, the claims are drawn to a product prepared by extrusion of various saccharides, not the method of preparing it. Okhuma's product is a mixture of dextrans and contains the linkages as recited in claim 1. Thus, Okhuma's product appears to be the same as one prepared by the process recited in claim 1. The extrusion reaction is expected to result in bond breakage (starch hydrolysis) and new bond formation, and it

is unclear how the addition of dextrose, as recited in amended claim 1, would affect the structure of the final product. Applicant mentions only that the dextrose serves as a processing aid. Furthermore, it is noted that no particular amount of dextrose or saccharide product is required by the claims, as set forth above with respect to the Saleeb reference. Thus, the claims are seen to encompass products prepared by the extrusion of mixtures which contain very small amounts of dextrose. Even if the effect of dextrose on the structure of the final product was clear, products prepared with very small amounts of dextrose would be very difficult to distinguish from Okhuma's product, since hydrolysis of starch and thus liberation of small oligosaccharides is expected to occur during Okhuma's process, producing a reaction mixture which contains large and small oligosaccharides. Okhuma's product appears to be the same as the claimed product for these reasons.

Appellant argues that FIBERSOL as disclosed in the Myers reference does not contain a majority of 1,4 bonds because it has almost no digestibility and that the examiner arrived a majority figure by including other types of bonds such as 1,2,4 linkages. This argument is not persuasive because claims are given their broadest reasonable interpretation. The claims require that "a majority of the linking bonds are 1,4 bonds." The instant claims do not require a majority of 1,4 linking bonds in the absence of other linkages. A product having a 1,2,4 linkage contains a 1,2 linking bond and a 1,4 linking bond. As illustrated by the Fouache reference as mentioned by Appellant, this is a reasonable and art-recognized way of counting bonds. Digestibility is not a claimed feature and, according to Appellant, varies whether the bonds are a

single 1,4 linkage or a 1,2,4 linkage. As set forth above, the broadest reasonable interpretation of the claims includes 1,4 linking bonds contained within a 1,2,4 linkage.

Appellant's argument with respect to the bonds in Fouache's product is the same as addressed above for the Myers reference. Appellant's argument that Fouache does not teach extrusion of a starch hydrolyzate with a saccharide is not persuasive for the same reasons discussed above for the Saleeb reference. The claims are drawn to a product which is a mixture, and the claims are extremely broad with respect to the materials used to prepare the mixture. It is also noted that dextrin is comprised of oligosaccharides of varying size, all of which are saccharides and starch hydrolyzates.

Appellant argues that Stahl teaches a product prepared using *leuconostoc* enzyme, which would be expected to give a product mostly linked by 1,6 bonds. Although the *leuconostoc* enzyme would be expected to give a product mostly linked by 1,6 bonds, Stahl's teachings are not limited to the *leuconostoc* enzyme. Claim 10 is drawn to a product made using *Aspergillus niger*, which would be expected to give primarily 1,4 linkages. Appellant's argument that Stahl's product would have a different distribution of linkages is not persuasive because the claims do not require a specific distribution of linkages different from that taught by Stahl, and the claimed process limitations are so broad that no particular distribution of linkages could be discerned from the reaction conditions, and the instant specification provides no guidance as to the specific distribution of linkages.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Layla Bland/

Examiner, Art Unit 1623

Conferees:

/Shaojia Anna Jiang/

Supervisory Patent Examiner, Art Unit 1623

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